AMERICAN VETERINARY REVIEW,

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EDITORIAL.

TOASTS AT OUR LAST BANQUET.—General custom—value of answers—those of the United States Veterinary Medical Association—"*The Colleges*"—our answer—comparison between English and American degrees—similar conditions and prospects—creation of the Royal College of Veterinary Surgeons in England—need of a National Board of Examiners for the United States—American veterinary medicine will need a national institution—the *Veterinary College of America*—its influence upon the elevation of the profession and harmony between its members—"*The Veterinary Medical Press*"—duties of the editor—duties imposed on veterinarians—"Veterinary Sanitary Work"—"*National Veterinary* Work"—better attention to meat inspection—let the subject be better treated in veterinary schools. BORROWED FEATHERS.—Duties of veterinary colleges—various titles and degrees—those who have claim to it—those who claim it without right—a letter as evidence—more in hand—one title in England—let us have but one—let it be "M.V.C.A."—this to be the motto of the American veterinarians. PASTEUR INSTITUTE.—Report of results since its opening in February 1890. ANNUAL MEETING OF THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.—Interesting papers to be presented.

TOASTS OF OUR LAST BANQUET.—Every one is cognizant of the custom among banqueters, in many countries, of supplementing the discussion of the solids of the feast with toasts, proposed by some of the guests, followed by responsive remarks by others of their number. Usually, the answers to any one toast contain very little pith or substance, and are scarcely worth reporting or considering, having no other use than to serve as occasions for the prolongation of the passing hours of social enjoyment. But again, there are times when both the sentiment proposed and the remarks in reply have a sensible and important bearing upon the matters which have

brought the convivialists together, and become useful reminders of the serious matters which had occupied their attention not long before, but had been partly displaced from their minds while enjoying the bodily pleasures of the festal board. The banquet which closed the twenty-seventh meeting of the United States Veterinary Medical Association in Chicago showed no departure from this usage, and included amongst the rest, three toasts which had an important bearing on the labors and objects of that great meeting. The first of these, "the Colleges," offered by toast master C. B. Michener, was responded to by ourselves and Dr. Withers, of Chicago. In our remarks we brought forward some views and conclusions which, in our opinion, ought not to be overlooked by the profession, and for the repetition and insistance of which ,at this time, we trust we shall be pardoned by our readers. After passing in review the attempts which had been made for the establishment of colleges in this country, and considering the results which followed the operations of those which, after a more or less limited existence, had " departed this life," we proceeded to a reference to those which are at the present time engaged in active work, and continued with an examination of the results obtained in the last twenty-five years, when from a class composed of one student for the whole of the American continent, we had reached the present period, when over one thousand students may be counted in the various schools of North America, with the natural result of several hundred yearly graduates. We were thus brought to consider the prospect of the harmony which might be expected to prevail, at least amongst those of the graduates who are influenced by a truly American sentiment, and took the opportunity to compare the future condition of things in this respect to that which existed some years ago in England, when several schools, more or less private in character, as ours are to-day, and probably for that reason, had fallen into a state of greater or less mutual ill-feeling, which had developed into a spirit of antagonism amongst the graduates of the various schools, and which we thought must have been more or less detrimental to the well-being of the profession in England. Our English

cousins found a remedy for that evil in the creation of a single veterinary college, the Royal College of Veterinary Surgeons, from which all veterinary practitioners are now obliged to graduate, without reference to an English or a Scotch education.

After presenting these points to our audience, we passed to the consideration of what we thought was intended in the suggestion made at one of the previous meetings by Dr. C. P. Lyman, viz., the idea of a consolidation of the profession, by a union of all the graduates, and therefore of all the schools, and suggested the possibility and hope that a similar measure might be adopted in the United States, by the creation of a National Board of Veterinary Examiners, to be appointed by the Department of Agriculture in Washington—a Board which would be entirely independent of all the schools. With this suggestion we closed our remarks, and as a final clincher of our sentiment, proposed a toast to the "foundation of the *Veterinary College of America*."

What possibility or practicability there may be in the suggestions we have thus made, remains to be seen. It is our fixed conviction that some plan of this nature will undoubtedly become necessary at an early date, and we feel satisfied that this will be the best, and possibly the only way by which certain desirable, if not necessary changes can be made in the curriculum of the various schools. It would be the means also of circumventing the possible unprofessional rivalry already existing, and which has been manifested by some of the respective graduates, the removal of which will greatly benefit the profession and prove an important step towards its elevation in public consideration. That our life may be spared to witness the day of the convening of this Board of Examiners ready to act, is, we hope, not a vain aspiration.

The second toast of unusual interest, "The Veterinary Medical Press," was answered by Professor R. S. Huidekoper. After recalling the life and death of a few journals which have been started in this country, the speaker paid his compliments to the journals now in existence, and enlarged upon the obligations imposed by their existence on each and every

individual practitioner. There was in the remarks of Dr. Huidekoper an important call on those upon whom these obligations rest. He reminded his hearers that no matter how willingly and laboriously the editor of a veterinary journal might exert himself, his work could never be what it might and ought to be, in the absence of proper aid and co-operation at the hands of the members of the profession, by the contribution of original articles, or reports of interesting cases, and of any matter, in fact, relating to veterinary science and the important relations which it bears to other interests now prominent and influential in the United States.

Yes, Dr. Huidekoper is right, and we, all of us, who aim to perform our duty towards the veterinary press must take his remarks into serious consideration, and endeavor to work together, one and all, for the creation of a truly American veterinary press, which shall be a credit and necessity to the country.

"Veterinary Sanitary Work," and "National Veterinary Work," were responded to by Dr. P. Paquin and Dr. E. Salmon, who chose for the principal topic of their remarks what may to outsiders be considered as a new departure in our profession, viz., the subject of meat inspection. The remarks made by these gentlemen were largely embodied in the discussion which had already taken place during the sessions of the official meeting, and concluded with an acknowledgment of the wisdom of the action taken by the Association in the appointment of the committee, a summary of whose labors are looked for in a report which will be submitted at the next meeting. Many other subjects were "toasted" at this great banquet, as many of our readers are already aware. Others might justify more or less comment, but the importance of the suggestions involved in the three principal ones to which we have alluded, entitle them to preference for prominent mention, and must justify our reconsideration of what was said at the Palmer House on the 17th of September, 1890.

BORROWED FEATHERS.—The necessity for some changes in the mode of granting degrees by veterinary colleges in the

United States seems to us to be assuming a character and degree more and more urgent, and it seems to us, also, that the day is fast approaching when the need for the creation of a single supreme authority for the exercise of the right to issue degrees will be acknowledged and acted upon, with the assent of all parties rightly interested in the questions involved in the matter. While our veterinary colleges are every year turning out young men of good education, and well equipped for the performance of their professional responsibilities, this is not the only duty devolving upon these institutions, and which constitute the only true obligation they have contracted towards their students and towards the public who look to them for the protection of their live stock. Truly, the young graduates who get their parchments are all right, and to them belong the rights and honors of their V.S., their D.V.S., or D.V.M., whatever it may be—and to them alone that right belongs, by the authority of their diplomas. But are the names of those who have this exclusive right well known to the public? How can one tell whether the certificate of any individual who represents himself as a graduate of this school or of that college is authentic or not? Do even the alumni of any one school know, and can they identify all those who may have graduated from the institution whose diploma they hold?

Look at the following, which by chance came into our hands, and which we copy verbatim:

"Pleas send me one of your illustrated alphabetical register of veterinary instruments and books also one blank diplome of the ———— college as i am a gradyate of that college and have got mine nerly ruined and want to have it coped of i also will give you a order in next letter for several books for students of mine.

We have besides this, numerous letters of inquiry from persons who want to know whether this or that man is a graduate of this school or of that college, and in many cases the objects of inquiry are found to be falsely pretending imposters, operating to the public detriment by their untruthful representations, and inflicting no small injury upon our graduates, as well as reflecting discredit upon the schools.

There can be but one way to remedy such an evil, and it can be, if not entirely, at least to a very great extent counteracted. This is to have but one title and a single responsible and recognized body to grant it. The M.R.C.V.S.E. and M.R.C.V.S.L., are done with in England; let the V.S., the D.V.S. and the D.V.M. be done with in the United States. Let us have no more graduates from the East or from the West, but give us instead, a body of AMERICAN VETERINARIANS, all of whom shall be members of the VETERINARY COLLEGE OF AMERICA—M. V. C. A.—a title worthy of the profession of this great country, and of which we know its holders will be justly proud, with a pride which will stimulate them to bear high and firmly and advance nobly the standard of American veterinary science.

NEW YORK PASTEUR INSTITUTE.—We have received the following through the kindness of Dr. Paul Gibier, the Director of the institute.

I forward you the results of the preventive inoculations against hydrophobia performed at this institute since its opening, (February 18, 1890).

To date six hundred and ten persons, having been bitten by dogs or cats, came to be treated. These patients may be divided into two categories.

1st. For four hundred and eighty of these persons it was demonstrated that the animals which attacked them were not mad. Consequently the patients were sent back after having had their wounds attended, during the proper length of time, when it was necessary. Four hundred patients of this series were consulted or *treated gratis*.

2d. In one hundred and thirty cases the anti-hydrophobic treatment was applied, hydrophobia having been demonstrated by veterinary examination of the animals which inflicted bites or by the inoculation in the laboratory, and in many cases by the death of some other persons or animals bitten by the same dogs. *All these persons are, to-day, enjoying good health.* In eighty cases the patients received the treatment *free of charge*.

The one hundred and thirty persons treated were from the following States:

New York	64	Maryland	1
New Jersey	12	Maine	1
Massachusetts	12	Kentucky	1
Connecticut	8	Ohio	1
Illinois	9	Arizona	1
Missouri	3	Iowa	1
North Carolina	3	Nebraska	1
Pennsylvania	3	Arkansas	1
New Hampshire	2	Louisiana	1
Georgia	2	Ontario, (Can)	1
Texas	2		

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.—The eighth annual meeting of this Association will be held in Chicago on the 5th and 6th of November. A number of interesting papers are to be presented, among them "Scrofulous Ostitis in Foals," "Castration of the Horse," "Infectious Abortion in Mares," "Navicular Disease and Neurotomy," "Parturient Eclampsia in the Mare," "Simple Fever followed by Purpura," and many others. Also Reports of Cases of unusual interest.

ORIGINAL ARTICLES.

CASTRATION OF THE CRYPTORCHID.

By R. MIDDLETON, A.B., D.V.S., Stuttgart, Germany.

The castration of cryptorchids has lately again become the theme of literary discussion, and is one of the subjects minutely described by Bang in his Surgery. The numerous occurrences of cryptorchismus in draught horses can easily account for the fact that this operation is often resorted to in France, Belgium and Denmark; while in Germany, the northern lowlands excepted, we are seldom offered the opportunity of collecting extensive experience on this subject. Therefore it has been erroneously viewed as a doubtful undertaking when performed upon horses of English and Arabian descent.

The communicated observations upon the coarser animals by veterinarians in the above countries prove the opposite; in the last year I myself have had sufficient proof that the undertaking in full-bred horses is practicable. The various methods

of the operation have often been described. I will, then, only consider the points which, in my opinion, have not previously been accorded the place which their importance merited.

In Denmark, as in Belgium, the inguinal canal has been selected by those having most to do with cryptorchids; the old method by Cæsarian section is seldom applied. From my view the former merits the preference, inasmuch as the testicles are more easily, and at once more directly, reached. When these organs remain in the abdomen they are regularly situated in the vicinity of the superior inguinal opening, and exceedingly seldom in other than this region.

The operation per the inguinal canal also deserves the preference when, before the operation, the location of the testes in the abdomen cannot with certainty be recorded; as when they are diminutive in size, and flabby, or when they are situated directly in the canal itself. In this last situation, removal by section of the flank would be seriously difficult, and in case of a narrow inguinal ring could not be carried out without resorting to the other operation and enlarging the ring. I will present the method recommended by Stockfleth and Nelson (Denmark) and lately modified by Bang.

The important problem is the proof of the presence of the testes in the abdominal cavity; this in itself is not without difficulty to the novice. Degive for this purpose introduces the hand into the rectum and therewith glides upon the lateral wall of the abdomen from the superior to the inferior regions. With this, I recommend also the following: Seek the anterior border of the pubis, and about four inches from the linea alba extend the fingers laterally as wide as possible upon the wall of the cavity. As a rule one feels the hemispherical, soft bodies, and can by manipulating with the fingers distinguish the size and outlines. Sometimes when in doubt, the proof is repeated after the administration of a purge; in other cases the vas deferens is followed from the vesicula seminalis to its junction with the organs of generation; which are either disposed in the inguinal passage and can be here detected through palpation by abducting the limb and simultaneously manipulating externally; or they may be felt at the internal inguinal ring,

having the epididymis in the canal. The diagnosis is much easier after evacuation of the bowel.

For eight to fourteen days preceding the operation voluminous feeding is to be avoided; in fat subjects, regular exercise, with a purge now and then; in all cases clysters are to be injected a few hours previous to casting. The less the amount of subcutaneous fat, the easier the operation and the sooner the convalescence. The animal to be operated upon is thrown so that the side to be incised is uppermost. During the administration of anæsthetics, the posterior uppermost limb is removed from the hobble and is to be bound as for an ordinary castration. A sack of straw is placed under the gluteal region so that the rear is higher than the anterior extremity, and so that the patient lies somewhat up on the back.

The limbs are now moistened, for the purpose of preventing dirt, etc., which may be upon them from falling into the wound during the operation; for the same reason a damp cloth is spread around the hoof displaced from the hobble. The inguinal and hypogastric regions are well washed with soap, and subsequently rinsed with a one per cent. corrosive sublimate solution. When one has the time the sheath, some time previous to the operation, should be thoroughly washed. After these prophylactic measures the following processes should occur, in the order detailed.

1. The incision; with the arms exposed to the elbows, and the same, together with the hands and instruments, carefully disinfected, the operator kneels as though about to perform the commoner operation. The external ring is now felt by palpation and an incision is made two inches in length made directly upon it and extending from the anterior to the posterior commissure. I prefer, with Bang, this spot, which enables one to enter the abdomen via the shortest way; some of the Belgian and Denmark operators incise the dartose and scrotum, and consequently are constrained to dissect back the tissues until the ring is reached.

The incision being upon the ring and through the skin, a large vein (post abdominal) is exposed; which if at all embarrassing should be doubly ligatured and cut through.

2. The exposure of the inguinal canal; for this purpose the two index fingers, with or without the thumb, are used; the loose connective tissue is pushed forwards and backwards in the direction of the internal ring. When the fingers are inserted up to the knuckles, the hand upon the intero-posterior commissure is removed, while the index and middle fingers of the other hand are again inserted for the purpose of finding, if possible, the tunica vaginalis, or any portion of the vas. Occasionally a portion of the epididymis is felt in the canal, as a characteristically yielding body. The testicle is easily diagnosed by its form; and when felt the tunica vaginalis is incised sufficient for the removal of the organ. When the globus minor only is discernable, the question arises, if the internal ring be of sufficient size to permit the passage of the generally stunted testicle; to ascertain this, one or two fingers are introduced. When widening of the natural openings is indicated I would advise the tenotome or herniotome. When the testes lie upon the abdominal wall the inguinal canal will of course be found empty, that is, only occupied by connective tissue; on the side of the canal toward the median line soft muscular substances of the oblique internus abdominis is felt, which, if followed, leads to the internal ring, providing one be extant. When the tunica vaginalis fails to appear in the canal, so also generally fails the internal inguinal ring; and the anatomical disposition is precisely as in the female.

3. Perforation of the occluded abdominal wall; there are three possible ways of removing the testicles from the abdomen, through the inguinal canal.

a. By perforating the peritoneum and thick connective tissue which covers the situation of the absent or incompletely developed internal ring.

b. By thrusting the fingers through the connective tissue behind this ring.

c. By lacerating the fibers of the internal oblique towards the white line and close by the side of the internal opening.

I have tried all three methods and prefer, as do the Danish, the last one. The first presupposes the existence of an in

ternal ring sufficiently large, and which may be diagnosed by the yielding character and also by the more or less defined hard connective tissue ring. In my first operation I had the opportunity of removing the organs by this method; in one case I succeeded in grasping the membrane which covered the ring and in drawing it out far enough to cut a small opening with the scissors; the opening so made was enlarged by the fingers and by the aid of my other hand in the rectum I managed to effect the extirpation. The second method is more difficult and is more safe as regards hernia, because the opening is so high. The perforation of the obliquus internus in a direction parallel to the arrangement of its muscular fasciculi, is accomplished with less fatigue and from the close apposition of the sides of the wound the danger of hernia is reduced to a minimum; therefore in my operations, recently, I have applied this method. After being convinced that the tunica vaginalis is absent, and when the internal ring is so narrow that two fingers cannot be introduced therein, the internal oblique muscle is pierced during inspiration by the index and middle fingers. There is no occasion for hurry, and when possible the digits are kept in the wound made, in order to diminish the danger of infectious material from entering the abdominal cavity. On these grounds also the withdrawing of the fingers after perforating the peritoneum is to be avoided; and moreover the wound is not always found afterward without trouble.

4. The seeking of the testicles or their appendages; the first varies in size from a pigeon's to hen's egg; it is flabby and distinguishable from hernia by its limitations; the vas appears under the finger as a hard medium-sized twine string; the epididymus has a peculiar feel, some parts hard, some soft, in fact it is precisely the consistency of a normal and physiological super-testicular body. When the testes are pinched the animal evinces pain, even in narcosis. Whichever of these portions is at hand, it must be firmly grasped and drawn through the artificial (or natural) opening.

Mostly the testicles are found laterally from the perforated spot, and in the vicinity of the pubic border. The most

convenient point to grasp is the globus major or minor. With one hand in the rectum the whereabouts of the testicle is comparatively easy to find out; I have avoided it, however, since the aseptic course of the wound can be very materially interfered with; when the hand is well washed and disinfected and the nails cleaned after withdrawing from the rectum, the "intention" of the healing cannot be influenced. To avoid the trouble of redisinfection, an assistant who understands the steps of the operation is a good help, especially by aiding per rectum.

When the organ is not found by two fingers the cutaneous wound should be enlarged and the whole hand inserted. The immediately adjacent tissue and surroundings of the internal ring are investigated; when not successful in meeting the testicle here the hand is carried back to the superior face of the bladder: the vas deferens sought out, and followed.

5. Removal of the testicles; for this purpose dressing forceps are fastened upon the cord, which is then ligatured in those portions by sterilized catgut or silk; the cord is now severed below the ligature. The separation may also be effected by careful torsion; I prefer the former, for by it hæmorrhage is certainly prevented, and healing favored. After the testes are removed, and there is assuredly no portion of intestine in the wound, the same is washed with sublimate solution 1:1000; and by means of the interrupted sutures the periphery of the wound is brought into juxtaposition. From six to eight sutures are used and the needle is plunged through the skin and subcutaneous tissues about one-half inch from the edge of the wound. After this the whole region is again washed with sublimate solution and a powder of iodoform and tannic acid 1:3 is strewn over the wound.

After the patient is in the stall a bandage is applied; this is made of saturated oakum (in carbolic solution) or sublimate cotton, which is covered by a triangular linen cloth and the latter fastened to the crupper strap. The sheath must be so disposed as not to saturate the bandage at every micturation.

The bandage is allowed to remain so long as no pyretical disturbance is manifested; the diet consists of half rations of

easily digested food, and the animal is kept in the sling from three to four days.

Should a fever appear, or should the surroundings of the wound be wet or swollen, the bandage is removed, the stitches at the corners of the wound withdrawn and a sublimate or creoline solution irrigation established. The principal danger lies in infection and peritonitis, which inaugurate a septicæmia. Careful disinfection of all things used in the operation does away with this; and when the hands or instruments come in contact with no undisinfected object, there is no reasonable ground for fear. I have noticed that operations performed in the country heal oftener without suppuration than those carried out in a hospital; the danger of infection in the owner's stall, provided it be ordinarily clean, is less than the danger of hospital gangrene in an institution which is not often and fundamentally disinfected.

Upon the thirteen cryptorchids which were operated on last year, I have noted that six cases involved the right, and four the left testicle; in the three last subjected, both organs were concealed. The average weight was five drachms; one nevertheless weighed four and a half and another seven ounces. The two latter were, anatomically, perfectly developed, so that no doubt existed concerning the procreative power. Eight were removed by ligature and eight by torsion; the first method is certainly without hæmorrhage, the last doubtfully so; and since blood destroys healing per primam, the first is preferable.

The first patient operated on last year died sixteen days after the operation from septicæmia, after the healing of the wound up to that time had progressed favorably; this infection was ascribed to contemporaneous cases of gangrene then in the hospital. Another case in which I had removed both testicles died from the same cause associated with abdominal hæmorrhage; this case undoubtedly died of septicæmia, but since this I have always removed the second testicle only after the healing of the wound of the first.

The sine qua non of the operation is fundamental antiseptis and a knowledge of the anatomical dispositions.

PUNCTURED WOUNDS OF THE FOOT, INVOLVING THE JOINT.

By Dr. EMERSON.

A paper read before the Massachusetts Veterinary Association.

The most serious punctured wounds are those occurring at or near the centre of the foot, where the flexor tendon, the synovial sac, or the bony articulation, may be injured.

By the centre of the foot I indicate that part of the plantar surface bounded anteriorly by the point of the frog, posteriorly by its middle cleft, and laterally by the sole, just outside the base. In this section the lateral clefts of the frog seem to be the most common seat of gathered nails. The reason of this is either the anatomical location, or the fact that feet which are otherwise very hard, are here usually soft, from mud and dirt becoming lodged here.

Nail pricks are of such common occurrence that many owners and drivers of horses, and not a few blacksmiths, have an infallible quick "cure" of their own, which they apply in all cases without regard to location or extent of injury. Hence, more than half the cases that the veterinarian is called to have been treated in one way or another for from one to four or five days.

When the owner finds that the animal is constantly growing worse he sends for the veterinarian and tells him what he has done, and how many times he has done it before without ever losing the use of the animal for a day.

Often, in a simple puncture, the soft tissues are so much swollen and the foot so painful, that when the surgeon is called it is almost impossible for him to ascertain just the extent of the injury with his probe. In the locality of the joint it is never advisable to probe deeply unless synovia is already freely discharging from the opening; then I can see no reason why we should not run the probe in as far as it will go, and satisfy ourselves whether there is any portion of bone exposed and roughened.

Of the cases I am about to relate, the first two occurred in my practice at Lynn, and the other two at the Veterinary Hospital at Boston.

Case No. 1.—The foreman of a truckman's stable came to me early on the morning of May 8th, 1889, wanting me to come immediately with him and see a horse that he thought had some serious kidney trouble. I asked him to describe the symptoms as he saw them. He said the horse lay stretched out in the stall; attempted to micturate frequently; was breathing fast, and was so stiff he could not move him out of the stall; also that he refused to eat. I accompanied him back to the stable, and on our way there he remarked that two days previous, in the morning, the horse had picked up a nail, but that he had had a pork rind and a leather applied to the foot, and the horse had worked the remainder of the day. As the horse was quite lame the next day, he allowed him to remain in the stable. He expressed great confidence that the foot would be all right if I could only effect a cure of this other disease.

On arriving at the stable an examination convinced me that the wound of the foot was the whole and only trouble. The animal was a bay gelding, five years old, weighing over 1,500 pounds. He was standing, working his near hind leg spasmodically, as though in great pain; he appeared to want to put the foot to the floor, but upon touching it with the toe would jerk it up again. He was breathing rapidly, with his nose elevated and in one corner, and sweating some on the neck and flanks. On my trying to pick up the foot the horse would put it down squarely on the floor, stand on it and jerk the other up. His temperature was 102.3°; pulse 90; respiration, 48.

A blacksmith was called in, and after much hard work succeeded in removing the shoe. The nail had entered just at the side of the frog, and an inch posterior to its apex. Synovia was flowing freely, accompanied with an abundance of rather thin, light-colored pus.

I ran my probe in a little ways, but not to the bottom of the wound; found the nail had taken an inward direction toward the median line of the foot.

I had the horn removed from half of the frog, the bar removed as much as possible, and the sole well thinned. I then

injected the wound with a five per cent. solution of carbolic acid, gave a hypodermic injection of 10 grains sulp. morphine above the fetlock, and left aconite and nitrate of potash powders.

May 9th.—Horse easier and eating; the temperature down to 101°. The soft parts from which the horn had been removed the day before were much swollen, and I thought it advisable to remove more horn, which I did. The synovia appeared to be much diminished, but there was a large amount of pus. Treatment the same as the day before, except that the morphine was discontinued.

May 10th.—Horse about the same in regard to pain. Pus showing a little around the coronet; the wound still discharging synovia, mostly in yellow clots; the soft parts more swollen than before I probed to the bottom of the wound and discovered bare bone, but it appeared to be smooth. I kept the foot through the day in an astringent bath of six ounces sulp. zinc to five gallons of water; applied a thin poultice at night.

May 11th.—Temperature, 101.4-5; pulse, 72; respiration, 20. The pus dark in color and an abundance of it, as well as synovia. The off hind leg was swelling badly, so I had him placed in slings; ordered two doses of opium and camphor, and continued the astringent tub through the day and the poultice at night. Had to keep a man by him all the time to keep the foot in the tub.

May 12 and 13.—Horse about the same. The same treatment continued, and I had the slings removed for an hour each day. The temperature both days was 101.3-5.

May 14th.—Temperature, 103°; pulse, 84; respiration, 30. The horse was, to all appearances, much worse. He would eat but little; he hung in the sling and was finally let down, where he remained quiet for three hours, when he was turned to his sound side, where he rested for two hours and then got up alone after one or two unsuccessful attempts. Opium and camphor given three times. As we could not help him in the tub, a bran poultice wet with white lotion was applied to the foot four times,

May 15th.—Temperature, 103 2-5°; pulse, 96. He had passed a very uncomfortable night, and had been let out of the slings at 4 A. M., but would not lie quietly when down, notwithstanding he was turned frequently. He had made a number of attempts to rise, but was not successful. I probed deeply and found quite a surface of bone very rough. I advised destroying, but the owner was away and the foreman was unwilling to act. I got the horse up at 8 A.M., with the aid of slings, and kept him there till 2 P. M. At 8 P. M. put him in the slings again and gave directions to keep him there as long as possible. He was let down at 12 P. M. I gave him two hypodermic injections of 6 grains each of morphine, and three doses of camphor and opium through the day and night. Applied hot poultices every three hours.

May 16th.—Temperature, 104; pulse very weak. I tried to put the horse in the slings, but was unsuccessful. The owner returned and was willing to destroy him. He was shot at 9 A. M.

Through the whole course of the case I injected the wound once a day with three per cent. solution carbolic acid, and the soft parts were washed with the same when the poultices were changed.

Post-mortem showed a patch of necrosis on the navicular bone the size of an old-fashioned three-cent piece.

Case No. 2.—On May 19th, 1889, I was called to a brown gelding weighing about 950 pounds, used in a delivery wagon. The day before the horse had picked up a nail in the off hind foot, by the side of the frog, and about an inch and a half from its apex. When the driver removed it, which he did with much difficulty, he said that no blood flowed, but that some liquid came out that looked like thin syrup.

The horse was taken home, the shoe removed and a flaxseed meal poultice applied. The next morning he did not eat his breakfast and would not touch his foot to the floor, so I was called. I found the horse with a temperature of 101°, pulse 60, respiration 20. A clear synovia was dripping from the wound. From my experience with the former case I decided that I could make the matter no worse by probing to

the bottom of the wound, which I did, much against the horse's will. I was gratified to find nothing hard. On removing the probe a gush of synovia followed. I thinned the horn around the wound, injected it with a 1 to 500 solution of corrosive sublimate, and placed him in an astringent tub of zinc sulphate through the day, and a poultice of bran wet with white lotion at night; gave two small doses of opium and camphor. This treatment was continued for four days, when, as he was resting his toe, the sedative was discontinued. On the third day the temperature was 102 2-5, but fell gradually from that. Very little suppuration occurred till the third day. In six days he began to lie down when released from the tub, and stay the greater part of the night, always lying on the sound side, and getting up without any trouble.

On the 30th of May (11th day) the discharge of synovia had ceased, but there was still considerable suppuration. The wound was now poulticed with flaxseed meal during the day, and shorts wet with white lotion at night for five days, when a high-heeled shoe was applied, the wound injected with a three per cent. solution of carbolic acid once a day and dressed with oil of cade on a pledget of oakum, kept in place by a thin strip of pliable wood. On June 15th, a little less than a month from the time of the accident, the horse still remained quite lame, but as the wound was entirely healed he was shod with a leather and turned out to pasture, where he remained for six weeks and was then put to work, and only a slight hitch was noticed in his gait when starting.

Case No. 3.—A large roan mare, weighing about 1,400 pounds, was admitted to the hospital Dec. 15, 1889, with the history of having picked up a nail, four days previous, in the near fore foot.

The wound was dressed with tar and oakum and shod with a leather. The mare worked for two days slightly lame and then grew much worse. As there was some snow and ice in the streets the owner decided that she must have slipped and strained her shoulder, and applied linaments to that part for two days; but as she was constantly getting worse he sent her to the hospital.

The mare was very lame, barely touching the foot to the ground in progression. On removing the shoe and looking for a nail hole I could see none, but found the outside heel very sore, and so began removing the horn from that locality. After removing considerable I found a very small hole between the bar and sole at the posterior part of the middle third of the foot. The horn had been separated from the sensitive sole by suppuration as far forward as the quarter, so I removed all of that, a part of the frog, and as much of the bar as possible. The bar was extremely sensitive to the touch. The nail had apparently gone obliquely through it in a backward direction. After cutting away as much as possible, my probe could only go in about three-quarters of an inch, and that with difficulty, owing to the smallness of the hole.

As this case remained in the hospital nearly two months, it would be tedious for you to hear the daily record; so I will only give a general outline of it.

The mare was extremely lame from the beginning. In four days synovia began to appear in small quantities, when she was put in the zinc sulphate bath day times, and flaxseed meal poultices at night. Suppuration was extensive; all of the horny frog had to be removed and the sole, as far forward as the toe on the outside. This surface horned over rapidly, and on December 26th a high heeled shoe was put on and the wound, which was now discharging mostly synovia, was injected twice daily with three per cent. carbolic and with white lotion, and a dressing of oakum soaked in white lotion applied.

After twelve days of this treatment the foot got too hard; so the shoe was removed and the foot poulticed for a few days, when the shoe was again put on and white lotion treatment resumed. From January 23d to February 1st there was very little pus discharged and less synovia; but the general symptoms were worse. She would not eat, and was losing flesh very fast. Her temperature had gradually been rising, till February 1st, when it was 103°. On this day, after injecting the wound, a flow of pus and synovia (largely pus) occurred, amounting to over an ounce. The next day the

temperature dropped to 101.3°, aud she rested the foot on the floor better than she had done since she was admitted. Improvement was steady from this time till she was discharged on February 18th. We alternated keeping her in a sling and in a box stall on peat moss. In the box stall she would lie down, usually on her lame side, and would have to be turned over before she could rise. Opium and other sedatives were given as thought best. She was fat when she came in, but on February 1st was a mere skeleton; but after that she began to gain flesh quite rapidly.

Case No. 4.—A black gelding, weighing about 1,300 pounds, was admitted to the hospital November 3d, 1888, with a nail wound of the near hind foot, half an inch from the point of the frog.

He was treated much the same way as the case just recited. He also lost considerable flesh, and for about a week could not rise from either side without the aid of slings. The discharge of synovia began rather abundantly, and gradually dwindled down till December 16th, when it was entirely stopped. The horse was discharged December 24th, walking fairly well; was rested in his owner's stable for about a month, when he walked sound and was put to work.

THE PRODUCTION OF IMMUNITY

WITH THE CHEMICAL SUBSTANCES FORMED DURING THE GROWTH OF THE BACILLUS OF HOG CHOLERA.

By E. A. v. Schweinitz, Ph.D.,

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As a continuation of the preliminary paper on the ptomaines from the hog cholera germ, presented by us to the Chemical Section of the American Association for the Advancement of Science, in August, and published in the *Medical News*, September 6, 1890, we present now a somewhat detailed account of the successful experiments in the production of immunity in guinea-pigs which have been made up to date. The work from this standpoint again is, of course,

a practical continuation of the experiments of Drs. Salmon and Smith made upon pigeons in 1877, in which sterilized culture-media were used for preventive inoculation. We refer further to the bulletin of the Bureau on "Hog Cholera," published in 1889, in which are recorded a number of experiments upon hogs, sterilized culture-media being used for the purpose of producing immunity.

This work of Drs. Salmon and Smith was the pioneer work in preventive inoculation with other than some form of the germ of the disease itself, and the work now recorded was, of course, under the advice and direction of Dr. Salmon as head of the Bureau of Animal Industry. Without the careful bacteriological study of hog cholera which has been made by the Bureau of Animal Industry, our work would have been impossible. For our laboratory experiments guinea-pigs were used, as being convenient to handle and susceptible to hog cholera. They have proved very satisfactory. The material used for inoculation was prepared in the chemical laboratory by modifications of methods already described, and by other methods which will be explained in more detail at some future date. The testing of the materials used, to determine that they were free from germs, and the greater part of the preventive inoculations, were made by Dr. Moore, with such quantities of substance and at such times as we thought best. The autopsies were also made by Dr. Moore, and the work thereby greatly facilitated.

As to the name which should be given to the ptomaines and albumins from the hog cholera culture-liquids, until their chemical constitution is more thoroughly studied, it would seem best, as there are several distinct swine diseases, to call the ptomaines from the hog cholera germs, as a class, *Sucholotoxins*, and the ptomaine, which appears to be the principal factor, *Sucholotoxin* (*Su*—a hog, *cholo*—cholera, and *toxus*—poison). *Sucholo-albumin* would seem to be sufficiently distinctive for the albumin of these culture-liquids. As Hankin* shows, the name *toxalbumin* is hardly the correct one to ap-

* *British Medical Journal*, 1889, p. 810.

ply to these substances. We shall, therefore, refer to the ptomaines and albumin by the names given above.

The first of our experiments that we will record were made with sucholotoxin.

EXPERIMENT I.—Two guinea-pigs, each weighing about three-fourths of a pound, were treated with a solution of about 0.05 gramme of sucholotoxin each. The solution was introduced under the skin of the inner side of the left thigh. Immediately after the operation the animal appeared uncomfortable, but was not made ill. For a few days there was a rise in temperature, and also a slight swelling at the point of inoculation, which, however, disappeared in about five days, and the animal was then well.

Two more guinea-pigs were now selected as checks, approximately of the same size and weight as those which had been treated, and the four animals were then inoculated with 0.1 c. c. of hog cholera virus each (0.1 c. c. beef-infusion and peptone culture one day old, plus 0.2 of sterile, normal salt solution). This is the dose which previous experiments made in the Bureau had shown to be the proper quantity to kill a guinea pig in from eight to ten days. The inoculations with the virus were also made subcutaneously in the thigh. The checks died in eight and nine days. Post-mortem examination showed a large swelling at the point of inoculation, infiltration of a purulent, grayish substance into the connective tissue, and necrosis of the superficial layer of the muscles of the thigh; enlargement and reddening of inguinal glands; Peyer's patches enlarged and pigmented; liver pale, and covered with a number of necrotic foci; spleen very much enlarged, dark-colored, and friable. Cover-glass preparations from the spleen and liver showed hog cholera germs. This was the characteristic appearance of all the check guinea-pigs upon post-mortem examination, and it will not be necessary to repeat these details.

Of the animals which had been first treated with the substance mentioned, and afterward inoculated, one died two days after the last check. Autopsy revealed the following: At the point of inoculation in the left thigh the subcutaneous

tissue was infiltrated with a greyish-white substance, and the superficial layer of muscles over the inner side of thigh, and 4 square centimeters of the abdominal wall were necrosed. liver pale; spleen much enlarged, dark-colored, and friable. Cover-glass preparations from the spleen showed a large number of hog cholera germs. Both ventricular walls of the heart were light-greyish and very brittle (necrosed). The other guinea-pig of this set was quite ill for ten days, with a large swelling at the point of inoculation. This finally opened and healed, and the animal was quite well within three weeks after the inoculation, and has continud so to date—five months.

EXPERIMENT II.—The next series of experiments were made with sucholo-albumin from beef-infusion and peptone culture-media.

Two guinea-pigs were again selected and treated with about 0.008 gramme each of sucholo-albumin. There was a slight rise of temperature in the animals and the formation of a small, hard lump at the point of injection. This disappeared by the eighth day; and the animals were quite well. Two more guinea-pigs were now taken as checks, and all four animals were inoculated with 0. 10 c. c. of hog cholera culture. The checks died within seven days. The post-mortem appearances were practically the same as those noted in the first series. The two guinea-pigs which had been treated with the sucholo-albumin died *ten* days after the checks. This indicates considerable resistance to the disease. Autopsy showed, at the point of injection with the albumin, the subcutaneous tissue thick and reddened. The animals were considerably emaciated. At the point of inoculation a cyst the size of a walnut, and composed of a grayish, purulent substance, was also found. The muscular wall surrounding this was sprinkled with punctiform hæmorrhages. Peyer's patches swollen and pigmented; mucous membrane of small intestine covered with a dry, yellowish, firm layer of mucus; stomach contained a considerable quantity of liquid; liver pale, and showed fatty degeneration; spleen slightly enlarged and dark. Cover-glass preparations showed no germs, but a culture

made from the spleen showed hog cholera germs. Beneath the peritoneum in the region of the spinal column, and in the mesentery was a considerable number of small grayish tubercles. Several other experiments were made by treating guinea-pigs with the albumin in varying quantities, all showing resistance, and subsequently immunity.

EXPERIMENT III.—Three guinea-pigs were treated with sucholo-albumin, 0.1 gramme being given to each, subcutaneously in the thigh. The albumin for two of the animals was derived from cultures containing blood-serum; the albumose given to the third was from ordinary beef-infusion peptone culture. Ugly ulcers formed at the point of inoculation, which healed, however, in from ten to fourteen days, and the animals, with the exception of a slight rise of temperature, were well.

Two checks were again selected, and the five animals were inoculated with 0. 1 c. c. hog cholera virus. The checks died respectively in eight and ten days from hog cholera. The animals which had received the preventive treatment were slightly ill for a few days with swelling at the point of inoculation, which finally opened and then healed nicely, and within a week the guinea-pigs were well.

Three weeks after the inoculation one of these animals was chloroformed and examined post-mortem. Not the slightest scar could be discovered, all the organs appeared perfectly normal, and no germs were found.

EXPERIMENT IV.—Four guinea-pigs were treated, two with a mixture of sucholotoxins, two with sucholotoxin and albumin. The injections were made as before, subcutaneously in the thighs, and at intervals extending over a period of four weeks. The sore caused by each injection was allowed to heal before the next one was made. After the animals had recovered from the last treatment two checks were selected, and the six were each inoculated with $\frac{1}{10}$ c. c. hog cholera virus. The checks died, one in eight and the other in ten days, the post-mortem examination showing characteristic hog cholera lesions. The animals having the preventive treatment were ill for about four days, those that received

only the sucholotoxins being more dull than the others. There was also slight swelling at the point of inoculation with the germ, which subsided in ten days, after which the animals were perfectly well, and have remained so—four months.

EXPERIMENT V.—Six guinea pigs were inoculated for this experiment, two with solution of the sucholotoxin and four with a solution of the mixed sucholotoxins. The sucholotoxin solution produced only slight local lesions, while the mixed toxins caused ulceration at the point of injection which did not heal for two weeks. The treatment in this case again extended over a period of from three to four weeks. The animals having by this time recovered, the test-experiment with hog-cholera virus was tried. Four of the animals mentioned above were taken—two from each set—and also two checks, and the six were inoculated. The checks died in eight and nine days, the autopsis showing the characteristic conditions of death from hog-cholera. Those that had the preventive treatment were ill and dull for from four to six days after the inoculation. At the point of inoculation there was also some swelling and infiltration, very slight, however, compared with the similar swelling on the checks. In the treated animals the swelling sloughed and healed, and within ten days after the inoculation they were perfectly well. To test the resistance of the animals that had been treated by this method, to ordinary exposure, the following experiments were conducted.

EXPERIMENT VI.—Two guinea-pegs that had received the preventive treatment, two blanks—*i. e.*, animals that had received no treatment—and two check animals that were inoculated with hog-cholera virus, were placed in one large cage. The checks became ill and died in eight or nine days from hog-cholera. During this time the cage was cleaned only three times, so as to give full and free opportunity for contagion. One week after the checks had died one of the blanks became ill and died within ten days. The autopsy showed hog-cholera lesions. The second blank became ill a few days after the first blank succumbed, and died within thirty days. The animals

which had the preventive treatment are now and have been quite well, though continually exposed for five weeks to every opportunity for contagion.

EXPERIMENT VII.—This experiment is a step in advance of those already recorded, and although not quite so conclusive, indicate that the proper methods have been adopted.

A pure chemical compound prepared synthetically in the laboratory, was used for treating the guinea-pigs. Three animals were taken, and this compound was administered to them by the method already used. There was a slight rise in temperature of the animals and swelling and soreness at the point of injection. After this had healed, these animals and two checks were inoculated with $\frac{1}{10}$ c. c. of hog-cholera culture. The checks died in eight and nine days. The animals which had been previously treated became ill, two dying five and six days after the checks. The third entirely recovered.

Post-mortem examination of the two that died showed the following: At the point of inoculation the skin had sloughed away over an area of 1 sq. cm. The superficial muscular layer was necrosed over an area of about 3 sq. cm. and to a depth of 1 mm., lymphatics in the fold of the knee much enlarged; Peyer's patches enlarged and pigmented; spleen *very slightly enlarged and not discolored*; kidenys reddened; lungs normal. Cover-glass preparation from the spleen showed a few hog-cholera germs. On both sides of the spinal column were several grayish tubercles, from $\frac{1}{4}$ to 2 mm. in diameter, lying just beneath the peritoneum. This material is being more fully tested, and experiments which promise to be successful are also being made upon hogs. Autopsies made from the animals of experiment VI, three or four weeks after their recovery, showed that the parts were perfectly normal, not even a scar being left upon the skin, and the immunity produced was therefore *perfect*.

It is important to add that in all the experiments great care was taken that the solutions used were free from germs, cultures always being made. In cases in which the albumin is used this is particularly important. A single precipitation

with absolute alcohol does not suffice to destroy the germs, and it is necessary to free the solution from germs by means of a Pasteur filter, or in some other suitable way. Therefore experiments made with material which has not been tested for germs are practically of no value. As to the poisonous character of the ptomaines, a single large dose is sufficient to kill a guinea-pig in from one hour to two days. The autopsy of a case of this kind is as follows: Liver, pale and fatty; subcutaneous tissue over abdomen, necrosed and infiltrated; muscle soft and friable. Other organs apparently normal.

The experiments here recorded show:

1. That in guinea-pigs *complete immunity* from hog-cholera can be produced by *chemical inoculation.*

2. The suchlotoxins and sucholo-albumin are equally effective in this respect, and a mixture of these two products gives greater immunity than either used by itself. The effect of the albumin in producing immunity from anthrax has already been pointed out by Hankin, his experiments being very successful.

3. The sucholotoxins given in large doses produce death. To produce immunity they should be administered in small quantities at a time and at frequent intervals, the system being in this way accustomed to the poison and enabled to resist it.

Further study in this interesting line of work is in progress.

The tabulated results of the foregoing experiments are appended:

TABULATED RESULTS OF EXPERIMENTS IN PRODUCING IMMUNITY FROM HOG-CHOLERA IN GUINEA-PIGS.

Number of experiment.	Material used for treatment.	Hog cholera virus used for each animal.	Number of animals used.	Number of checks.	Number of days between inoculation with virus and death of checks.	Result in treated animals.
I.	Sucholotoxin - - -	0.10 c. c.	2	2	8 and 9	1 died in 11 days; 1 recovered.
II.	Sucholo-albumin - -	do.	2	2	7	Died in 17 days; great resistance.
III.	Sucholo-albumin - -	do.	3	2	8 and 10	Recovered; immunity.
IV.	1. Sucholotoxins - -	do.	2			Recovered; immunity.
	2. Sucholotoxin and albumin	do.	2	2	8 and 10	
V.	1. Sucholotoxin - -	do.	2			Recovered; immunity.
	2. Sucholotoxins - -	do.	2	2 blanks	8 and 9	Blanks died in 18 and 30 days.
VI.	Sucholotoxins - -	do.	2	2 checks		Others not affected; immunity.
					8 and 9	Two died in 13 and 14 days. Third
VII.	Pure chemical - -	do.	3	2	8 and 9	recovered; immunity.

A PRACTICAL PAPER ON THE CASTRATION OF THE BITCH

By T. B. Rogers, D.V.S.

Nothing so enhances the reputation of the veterinarian as does skill in operative procedures, nothing damns him so quickly as ill success in his operations. The writer believes that comparatively few veterinarians spay bitches unless they are driven to it, and begs to offer the result of ten years' experience in the operation to the younger members of his profession. The proper age is any time after the sixth month; before this time even the educated finger fails to recognize the uterus; and the operator who cannot by sense of touch find what he wants has still something to learn.

What is the best position to secure the animal in for the operation? My method is to tie the mouth and fore-legs, to have two assistants (or, if the dog is large, three), and to operate with the animal lying on the back. The assistant holding the hind legs stretches them gently backward and well apart, so as to render the abdominal muscles tense. If the dog is large, a third assistant makes pressure on the thorax, while the one in front holds the head and front legs. Mr. Cole, of Millville, N. J., who spays a good many bitches, hangs them up by the hind-legs, the legs being stretched apart by a small "gambrel," like a slaughtered pig hung up to cool. The advantages of this method are several: the intestines gravitate downward out of the way, the danger of death from cerebral anæmia is lessened, and if the dog is small the operation can be performed without assistance by passing a strap through the tied front legs and putting the operator's foot in it. The disadvantages are the difficulty in separating the divided recti muscles, owing to the animal's weight stretching them, and the liability to injury of back or legs through excessive stretching during the operation. I have tried it, and don't like it. Other operators have a trough in which the animal is strapped; this method is open to the objection that it cannot be carried round in a scattered country practice.

The instruments needed are a convex bistoury, or prefer-

ably a "Miles-hook," an "S" sound, straight and curved needles, and silk.

The dog should be washed with carbolic soap the day before the operation, and, if woolly, should have the region of the operation shaved; but if this is done great care must be used to remove all the cut hair or it will get in the wound and cause trouble. It is advantageous also to limit the diet to milk and water for a day prior to the operation. Antiseptic precautions should be used throughout. The incision should be on the median line, should commence a little nearer the ensiform cartilage than the pubes, and should be carried backward for an inch and a half and *no more*. *The longer the incision the greater the mortality.* I prefer to cut the skin first, and then go carefully between the recti muscles without injuring their fibres, and the peritoneum should be divided with the muscles, if care be taken to commence near enough to the ensiform cartilage. The muscles will be found thinner than below, and the peritoneum in closer apposition to them; the danger of incising a full bladder will also be lessened. The incision made, the operator standing on the left side of the bench passes the index finger of the left hand into the wound, the dorsal surface of the finger looking toward the head of the animal, and moving it backward and somewhat toward him, he should find the right horn of the uterus. If difficulty occurs (and it will occur occasionally), the "S" sound should be greased and carefully passed through the vagina into the uterus and the end of the sound felt for. Having brought out the horn it should be gently held by the thumb and forefinger of the left hand, being kept slightly tense, and the index finger of the right hand being passed along the horn, will find the ovary suspended in a fold of broad ligament; a little pressure of the finger loosens it, and allows the horn and ovary to be brought outside the abdominal cavity. The same procedure is followed with the other horn, and a ligature being passed round both horns about an inch from their distal end, the ovaries and portions of horn are removed, the stump sponged off, and with its ligature returned to its place. The ligature becomes encysted or absorbed. The assistant

at the hind-legs elevates them, allowing the intestines to gravitate away from the incision, and any protruding omentum is sponged off and returned. To close the wound, the operator stands on the opposite side to that which he occupied before, and placing the index finger of the left hand in the wound between the viscera and peritoneum, passes the first half of the stitch from without to within, taking a good hold, and not removing the finger until the needle touches it. The needle is now drawn through and out of the cavity, and the index finger of the left hand passed into the cavity, the peritoneum on the opposite side is drawn up until its edge approximates the cut in the muscles and the needle passed close to the finger from within to without. The ligature is now pulled upward, the finger being still retained in the cavity to ensure that nothing is included in the wound, and is tied, sliding the finger out as the final tension is applied. This stitch is passed midway of the incision, and one is now passed through the skin only on each side of it.

The dog is now lifted gently down and liberated. The stitches are removed on the fourth day, and no solid food allowed until after their removal. What are the accidents incidental to the operation? The most annoying one is to break off the tender horn in a young patient through some sudden struggle and be unable to find the immature ovary without enlarging the wound. This accident happens less frequently as the practitioner becomes more experienced, and is followed by "heat," though, of course, the bitch cannot become pregnant. I have seen one death from shock in an old fatty-textured bitch. Occasionally a death occurs from peritonitis, but this is rare. Delay in removing stitches may lead to the formation of a troublesome fistula; this is best treated by freshening the edges of the canal with a needle. Some times, about a year after the operation, through attachment of a coil of intestine to the uterine stump, the lumen of the gut becomes wholly or partially occluded, and the animal pines, and dies. I have seen two such. On one occasion I cut into a full bladder, mistaking it for the peritoneum. The wound was closed by interrupted suture, the abdominal cav-

ity well sponged out, and the bitch made a good recovery. I have never incised intestine, but some years ago was so unfortunate as to include a loop of intestine in the wound. If pregnancy is found, and is not far advanced, the ovaries may be removed by torsion or scraping, and the horns left intact. If far advanced, I think it is better to close the wound without attempting their removal.

It is hardly necessary to add that the operation should not be performed during lactation, or during the course of, or recovery from, an attack of sickness.

BOTTOM DISEASE.*

By D. B. McCapes, V.S., Vermillion, South Dakota.

The above name is given to a disease which was first noticed upon the Missouri bottoms, and at that time it was supposed to exist there only. This latter supposition is erroneous, the disease appearing in all its stages upon the uplands as well. Yet, in support of the theory which formerly existed, it is still noticed that the majority of the cases are met with upon the bottom lands. The grass, both on the uplands and bottoms, is very rich and is highly prized by feeders. If anything that upon the bottom land is regarded as the superior article.

The disease dates back several years. The writer has had personal experience with it for eight years. The first knowl edge he had of it was when it appeared upon his father's farm, which is on the high land, in the spring of 1881, and before fall had killed fourteen out of twenty-two head. It is not often that the disease affects such a large number, and for two or three years after that it was not so extensive, a lone case coming up occasionally, but it was always fatal.

It apparently is not a contagious disease, as it is often noticed that out of one man's ten or fifteen head one or two only take the disease and die, while all the rest remain perfectly healthy. This in brief is a history of bottom disease.

*A paper presented at the meeting of the United States Veterinary Medical Association in Chicago.

Etiology.—A few veterinarians have stated that the disease is caused by eating crotalaria sagettalis, but this seems hardly possible, as the writer has repeatedly seen the disease occur among animals which had no access whatever to that plant. The disease seems to show no preference in selecting its victims; horses that have either well or poorly ventilated stables, horses that have poor feed and those that are well-fed, the old crow-bait and the family pet, all alike are seized and follow the same downward path to death. If it is any more prevalent in any one season, that one is fall, about the time grasses are dying, but it is seen at all times of the year.

Symptoms.—The symptoms in general resemble those of cerebro-spinal meningitis. The writer will give them as well as he can. About the first sign of sickness will be the loss of energy, the animal appearing dull and languid, apparently going to sleep while eating; will wake suddenly, eat for a time and gradually fall into somnolence again. If turned out into the pasture, as a general thing they walk continually with a staggering and rather go-as-you-please gait. The action of their hind limbs is peculiar, stepping long and knuckling over in the last stages. Membrane nictitans is slightly injected in first stages, increasing as the disease progresses; buccal membrane generally dry and hot; membrane of vagina pale; temperature lower than normal, by one, two or three degrees. At times they become crazy and crowd against the manger, bruising and knocking the skin from their head, which becomes swollen; they have a great desire to rub their nose, as if trying to remove some very troublesome irritant; and lastly, violent stamping of the hind feet, first one and then the other. These last symptoms are not always present. Fæces are hard and very small; diarrhœa very seldom accompanies the disease, but when present the animal soon succumbs. The duration of the disease is from two weeks to two months.

The following is a description of a case which occurred last February. On the sixth of the month the animal was dull and drowsy; loss of appetite had been noticed for several days; mucous membranes were dull and of a yellowish

tinge; slight stamping of hind feet and wandering about the stall; pulse, 45; temperature, 97°.

February 8th, the animal was about the same with better appetite; pulse, 45; temperature, 95°; animal more quiet and drowsy: fæces small, hard and scanty.

From February 6th to 8th, the foll-ball compound of fifteen grains quinine and one grain strychnine were given three times daily.

From February 8th to 10th the following dose was given three times daily: Strychnine, grains, lss; alcohol, 1 oz.; carbonate ammonia, 11 drachms; fluid canadensis, 11 drachms.

February 11th the horse was very uneasy, wandering around the stall, staggering, falling and rising again, rubbing nose on manger and walls of barn; head swollen; respiration difficult; temperature, 99°; could not take pulse. The horse was destroyed; post mortem lesions were very slight so far as I was able to determine, with the exception of the viscera, which were very pale.

THE SCREW-WORM.

By M. FRANCIS, D.V.M., Texas Agricultural Experiment Station.

In the first annual report of this station I published some notes on the screw-worm, giving only such facts as I had witnessed, and remedies that I had employed. After two years of study and observation, during the summer months of which I have seen cases of the parasite almost daily, it is thought advisable to give a more exhaustive report of the life history of the insect.

The screw-worm is the larva or maggot of a dipterous insect (*Lucilia macellaria*) that is very common in this portion of the country during the summer, and is parasitic on man and animals.

The mature insect ("Imago") is a fly, a trifle larger than our ordinary house fly, with a yellow head and three dark longitudinal lines on the thorax. The abdomen is yellowish green. The fly lays its eggs in wound sores, and even in the natural openings of man and animals.

In "Animal Parasites and Messmates," by Van Benenden, page 119, there appears the following: "There is another fly in Mexico which is dangerous to man; it is known by the name of *Musca hominivora*, or more correctly, *Lucilia hominivora*. Vercammer, a military surgeon of the Belgian army, relates that a soldier in Mexico had his glottis destroyed, and the sides of the roof of his mouth rendered ragged and torn, as if a cutting-punch had been driven into those organs. This soldier threw up with his spittle more than two hundred larvæ of this fly."

Prof. James Law, of Cornell University, in a letter to the writer, said: "Under the name of *Lucilia hominivora* it is said to be very destructive to the French convicts at Cayenne, the fly depositing its eggs in the mouth and nostrils during sleep.'

No cases in man have fallen under the personal observation of the writer.

The fly seems to be well distributed over the American Continent, for Dr. Williston, of Yale College, writes that "it occurs everywhere from Canada to Patagonia." Although so generally distributed, only in Texas does it bear an economic importance in the United States. Of all our domesticated animals cattle suffer the most from its ravages. They occur in wounds from horns, castrating, spaying, branding, dehorning, barbed wire injuries, and often where ticks have burst on the brisket, flank, or just behind the udder of cows. They often occur in the vulvæ of fresh cows, especially if there has been a retention of the placenta or afterbirth. Young calves are almost invariably affected in the navel and often in the mouth, causing the teeth to fall out. One case occurred in the first stomach (paunch or rumen) that is worthy of mention: Last September the writer had occasion to kill a Jersey bull calf, probably two months old, that had screw-worms in both hind legs just above the hock joint. On opening the abdomen I found hair-balls in the stomach (rumen), and, to my surprise, about twenty-five fully matured screw-worms almost buried in the wall of that organ. I placed some of the worms in moist earth, and in ten to twelve days they hatched out genuine screw-worm flies. How did they come there?

My opinion is that the calf licked the sores on his legs, and in doing so took in some eggs that hatched and developed in the stomach.

Horses and mules are not so often attacked. In them they are usually found in barbed wire injuries, and occasionally in the sheaths of horses, the vaginæ of mares, and the navels of colts.

Hogs are more liable to become affected than horses. They are frequently wounded by dogs and by fighting, or there may be barbed wire injuries, wounds from castration, etc.

Sheep are comparatively free from attacks unless injured by dogs.

In all animals alike, the eggs, after being laid by the fly, hatch into larvæ or so-called "worms." The exact length of time this requires seems to vary with circumstances. My present opinion is that, if the eggs are laid in a moist place and on a warm day, it requires less than one hour; whereas, if laid in a dry place they seem to dry up and lose their vitality. The young larvæ when first hatched are small and easily overlooked. If they are hatched on the surface in a drop of blood from a ruptured tick, for instance, they attempt to perforate the skin, and if hatched in wounds they at once become buried out of sight. They seem to attach themselves by their heads, and burrow their way under the skin, completely devouring the soft flesh. Occasionally a few are seen moving from one place to another, but usually they remain fixed at one point. The worms grow steadily in size, and the hole in the flesh becomes larger every day. Sometimes the worms make tunnels, but not to any depth; they usually stay on the surface. They evidently produce considerable irritation, for the part is always swollen and constantly bleeding. This swollen, gaping appearance of the wounds, together with the constant discharge of blood, are characteristic of the presence of worms. It seems to require about a week for the worms to become fully grown. At that time they are about five-eighths to six-eighths of an inch long. They then leave the sore and go into the ground, where they pass their pupa state and hatch out as flies in from nine to twelve days. Of several

hundred hatched out by the writer, the shortest time was nine days and the longest fourteen days, but in the majority of cases it required from nine to twelve days. While the larvæ are thus developing the flies are constantly laying fresh eggs in the wounds, so that the young worms take the places of the matured ones, and thus keep up a constant and progressive loss of tissue. If the worms are not killed they eat constantly deeper, and often kill the animal. Sometimes the abdomen is opened and the bowels escape—as is especially liable in case of heifers spayed through the abdomen. At other times a tail is eaten off, or extensive caverns are made into the muscles.

The treatment usually employed in these cases consists simply of killing the larvæ with cresylic ointment, calomel, chloroform, or carbolic acid. The selection of the most suitable remedy will vary somewhat with the location, char acter and extent of the sores. In some cases bandages are useful. In others the sores can be filled with oakum and a few stitches taken. All treatment should be supplemented by daubing the margins of the wound with pine tar to ward off the fly. A vast number of cases can be prevented by keeping cattle free from common cattle ticks.

THE TREATMENT OF ECZEMA IN DOGS.

Translated from an article by Dr. Muller in *Der Thierarzt*, by F. W. Turner, D.V.S., New York City.

In the acute stages of eczema—especially in eczema vesiculosum, pustulosum and madidans—far better results are obtained by simple treatment with dressing powder, consisting of zinc oxide, starch, talcum, boracic or salicylic acid, than from the so-much-vaunted preparations of tar and corrosive sublimate. Even frequent washing with soap often does harm in acute cases. When the eruptions occur on such parts of the body where powder will not adhere, a mild ointment, consisting of zinc oxide, boracic or salicylic acid with a little water and lanoline, will often prove very beneficial. In chronic cases the treatment will naturally vary according to the stage of the disease, since it may be either scaly or moist. In moist

chronic eczema, so often occurring in dogs, the treatment with an ointment of red oxide of mercury, or ammoniated mercury, solution of corrosive sublimate 1–200, or the painting of the eczematous spot with a strong solution of caustic soda or potash, is indicated; also frequent washing with soap and water is of service. When tar is applied to moist spots, or as long as any moisture shows itself, it seems to aggravate the sore and do more harm than good. A new remedy, lately introduced in medicine, of great value in the treatment of moist chronic eczema, is sozoiodol of mercury. When an ointment of 2 per cent, of sozoiodol of mercury with lanoline is applied several times a day to the affected parts, the moist surfaces soon become dry, the swelling is rapidly reduced, the epidermis regenerated, the skin becomes normal, and only the loss of hair shows where the disease had existed. Observations show that dogs would vomit freely if they had a chance to lick off the ointment, and gave occasion to study means of preventing such an accident with the following results:

Sozoiodol of mercury is a very fine, orange-yellow powder, containing 31.2 per cent. of mercury and 38 per cent. iodine, almost insoluble in water, but readily soluble in water by the addition of a little chloride of sodium or kitchen salt. When applied in the pure state to wounds or mucous membranes, it acts as a strong irritant. When diluted about twenty times, it is still very irritating, but on diluting it fifty times it seems to irritate no longer. It seems advisable, when using a sozoiodol of mercury ointment to prevent the animal from licking off the ointment by a proper muzzle.

In cases where we have a dry chronic eczema, no matter whether it was dry from the beginning or developed from a case of moist eczema, then the different tar preparations, such as pix liquida, ichthyol and thiol are the proper remedies. Investigations have shown that the terrible itch in eczema is much more speedily relieved by the application of thiol or ichthyol, than by tar, a fact for which no satisfactory explanation can be given as yet. In all cases where much itching exists, thiol or ichthyol is preferable to tar, for the constant rubbing and scratching of the dog generally causes an acute degeneration of the affected parts.

REPORTS OF CASES.

AN EPIZOOTIC APHTHOUS FEVER.

By Dr. P. Paquin, Columbia, Mo.

There has existed in the State of Missouri (and I am told in Iowa and Illinois to some extent) a fever which has attacked during the same period so many cattle very widely scattered, that I am at a loss to account for the active cause. No less than three thousand two hundred and sixty-six cases have been reported to this office, and I have seen besides upwards of two hundred and ten cases in a couple of counties. Dr. C. B. Michener, of New York, saw a few cases with me near Columbia and elsewhere in Missouri.

The malady is, in its course, history and lesions, new to me. It seems to have sprung up all at once in several counties of our State, seven of them having reported within two or three days a large number of outbreaks among their herds.

There was no regular course of progress in any locality. In some herds only one or two heads suffered, whilst in others the vast majority and sometimes all became ill. In some townships it stopped at one farm, and in others it visited a great many.

The death rate in adults was not over one-half of one per cent., and these deaths were due to complications or starvation. In suckling calves the disease was not so prevalent even in the affected herds, but among them actually diseased, the death rate was in average twenty per cent. in those too young to be specially fed. A great deal of damage was caused, however, by the rapid loss of flesh and milk due to inability to eat and ruminate. In a very few days fat cattle fell in flesh to the amount of six to ten dollars.

There was some resemblance in the duration and general lesions with the European foot and mouth disease, but the peculiar, specific and characteristic blebs of the latter were not present. The nature and limitation of the blisters and ulcers differed, and again inoculation practiced repeatedly

with matter from affected mouths failed to produce anything in cattle, sheep and goat. The disease I am about to describe hurriedly does not seem contagious, but some unknown influence acting broadly produced it.

The symptoms are as follows: The cattle appear gaunt and gaunter day after day for want of food. They are more or less stiff in locomotion. If examined the nose may be found hot, dry, cracked and sometimes wine colored in patches. The pad and the lips present at an early date blisters which soon form a thick, yellowish, cracked, soft crust. Sometimes the tongue is blotched or blistered, but rarely. There is much drooling of stringy, watery matter from the mouth, and the odor is sometimes anything but agreeable, often very fetid indeed. Those yellowish crusts slough out after a few days and leave raw surfaces or ulcers. There is *rarely* a kind of smacking of the lips. The blisters are mostly large cracked patches across the pad, as though the parts had been scalded. They are not circumscribed blebs.

In a few cases complications arise by which gangrene of the gums extends to the jaw bones or teeth, and in exceedingly few instances some teeth become loose and even drop off.

In most of cases, lameness and stiffness becomes severe, as in laminitis. In very rare exceptions lesions appeared above the hoof in the cleft. Occasionally also, blisters and consequent results (crusts and even ulcers) occur on the udder. In nine or ten cases these appeared on the neck, the abdomen, the back and about the tail. Uncommonly there is diarrhœa. The malady runs its regular course in about eight days. The shortest course I have noticed was five and the longest eleven days. There are irregular or complicated cases which last much longer. Fever averages 103° F. The type is very mild.

As treatment astringent washes of the ulcers, laxative drugs and administration of food was very successful in shortening the course and preventing too much loss of flesh. Boracic acid and alum solutions were often used with benefit. Prehension of food usually being impossible, most cattle were fed quite beneficially with ears of corn and other solid

food pushed into the mouth between the sets of molar teeth. I would be pleased to hear from some experienced veterinarian on the subject. I have been too busy to study the pathology of the affection, nor have I time to search for its cause.

ACUTE TUBERCULAR MENINGITIS.

By T. P. Turner, D.V.M., Westchester, Pa.

A case of this rather rare disease in veterinary practice came under my observation quite recently.

At a late hour on the evening of September 13th I was called to see a cow that had been acting very strangely for five or six days, showing symptoms of some cerebral irritation, such as wandering away from the herd and running against trees, fences, etc. Probably the prodomic stage of this case had extended over a period of two or three weeks, since the attendants were rather careless and had noticed no decided symptoms until the cow was in a delirious condition.

For a period of three months she had coughed at intervals, and on my first visit coughed several times; the latter being the characteristic cough of tuberculosis. The animal, however, was in a fair condition, and was in an advanced stage of pregnancy.

When first seen by me she was lying in a low, damp meadow, and with much difficulty she was induced to rise upon her feet.

Being started to walk, she would travel in small circles to the left. By performing a succession of such movements and by attracting her attention with a bright light, we managed to bring her within one hundred yards of the barn, where she went down and seemed to be paralyzed in the fore legs, since when she attempted to get up she could only get upon her knees.

My first impression was that she was suffering from simple acute meningitis, and was treated accordingly. A brisk cathartic was administered, along with chloral hydrate; she was also bled, because she was quite plethoric.

The next morning (Sept. 14th) she was removed to the

barn by a sled, and it was there that the first thorough examination of her general condition was made.

At times she was in an excited condition, and sometimes would pass into a condition of partial coma. At other times a marked improvement could be seen in her condition, but it was only temporary, as she would soon relapse into the same comatose condition.

The pulse was irregular and very peculiar, as there seemed to be an inequality in the strength of the beats, this being probably due to pressure on the roots of the pneumagastric nerve in the medulla. The respirations were rather hurried, and the temperature was never over 103° F., averaging from 102.2° F. to 103° F. The pupils were dilated. The discharges from the bladder and rectum were involuntary.

The cow groaned as if in great pain, but of course was not, owing to her comatose condition. During the day she coughed several times, and, on investigating the cause, sibillant rales were heard over a large surface of the left lung, and, on percussion, evidences were found of a large abscess. The right lung seemed to be healthy. The cervical and inguinal glands were enlarged and hard.

It was upon these symptoms and from the fact that several other animals of the same herd were suffering from tuberculosis, that the diagnosis of acute tubercular meningitis was made and a suitable prognosis given.

Sept. 15th.—Cow was in the same condition, but was not coughing; while giving an enema, fœtal movements were quite marked, and on examining the vagina shortly after giving the enema, the os was found dilated and parturition not far distant.

Sept. 16th.—The cow seemed to be resting easier, but about 10 A. M. gave birth, with some little assistance, to a live calf.

The offspring was strong, healthy, and of "full term." After parturition the mother became very much excited, throwing her head to one side, trying to get up, moaning and showing symptoms that we usually find in parturient apoplexy.

The next day (Sept. 17th) she was in the same condition,

but became much worse in the evening, and the owner was advised to have her destroyed. She died about 11 P. M. that night. An autopsy made about 10 A. M. on the 18th revealed the following alterations: Vessels of the brain were engorged, especially those of the pia-mater, and a colorless fluid was spread over the latter.

The lateral ventricles contained an abnormal quantity of a serous fluid, but the third and fourth ventricles seemed normal.

A deposit of miliary tubercles was found over the pia-mater and also along the course of the larger arteries; the largest tubercle was at the base of the brain; it was about the size of a bean and slightly caseous. The spinal cord was not examined.

On opening the thoracic cavity the bronchial and medias tinal glands were found to be enlarged, hard and cheesy; the left lung was full of abscesses of various sizes, the largest being as large as a cocoanut and filled with a cheesy, purulent mass. The right lung contained several tubercles about the size of a pigeon's egg, but no abscesses were found.

The peritoneum was also covered with miliary tubercles throughout its extent. All the other organs were normal, with the exception of a cystic kidney, and the uterus, which was of necessity slightly congested.

OBSTETRIC CASES.

By Dr. C. H. Peabody, Providence, R. I.

As we see so much about rabies, tuberculosis, graduates and non-graduates, I thought a report of two or three practical cases might be of some interest to your readers.

On Sept. 22d, about 6 o'clock P. M., I was called to see a silver terrier bitch that was trying to whelp, and had expelled one dead pup at about 3 o'clock that P. M., and had been straining quite hard ever since.

On examination I found a breach presentation, also that the posterior part of the croupe could just be reached with the middle finger. I at once applied the forceps which I

have for the purpose, and extracted, so to speak, a little fellow all right, which the mother at once began to take care of, at the same time keeping up a severe straining.

In about five minutes I made another examination, and found a head engaged in the pelvic opening. I waited five minutes longer for the result by nature, but another examination showed no progress, so I again applied the forceps and relieved the bitch of another pup, and about the same mode of treatment was pursued until she was relieved of five pups, she not being able to expel them herself. The bitch had been a perfect house dog, not being allowed to run at all, and had been carried up and down stairs, and fed on cake, etc. She was given brandy and milk after her delivery, with a good, generous diet of cooked meat. She and her pups are now doing well.

Again, on October 3d, I was called to see a mare, claimed to be due to foal on October 25th. She was a large gray, five years old, with one foot of the fœtus protruding from her vulva. On inquiry I found that the mare had been having colic for about two hours, getting up and lying down every few minutes, but had not perspired much. She had been given some Somerville fever drops and some hot whisky, and the foot had been out about five minutes before I came. On examination I found the head below the rim of the pelvis and the other foot turned back at the knee. I got a small rope attached to the knee, another to the foot already out, and placed the mare off of a platform so that her hind quarters were about two feet higher than her forward parts. I placed my hand on the back of the neck of the fœtus, and a good strong man to my back, he being braced against the wall, so that, when the mare did not strain, with a good steady shove I pressed the fœtus forward enough to get the nose up, and with a cord on his under jaw and a thumb and fingers on the nostrils, by giving a good strong pull on the legs and jaws when the mare strained, we succeeded in delivering her of a live foal, which by a little artificial respiration, some blowing into the nostrils and the good attention of the mare, lived and is now quite lively.

Finally; On October 11th I was called to the Friends' School of this city to see a cow that was trying to calve, and found a large Holstein with both forward legs of a calf protruding from her vagina. On examination I found an anterior presentation, with lateral deviation of the head toward the abdomen and deep down in the abdominal cavity of the cow; so much so that I could not bring any part of my hand or fingers to touch any part of the head. I at once, after a good pull, decided to cut the legs and not waste time trying to straighten it.

Taking a hooked knife, I split the skin of both fore legs from the outside of the shoulder to the fetlock, separated the joint and then dissected the skin back on each cut through the pectoral muscles. I then attached a rope to the knees and got a couple of stout men to pull strong and steady, and so got the forward extremities all away, one at a time.

I then passed a rope around the curvature of the neck, and again tried the virtue of a good pull, but it was not a success. I then with my hooked knife cut into the thoracic cavity, cutting along the sternum and emptying it and the abdominal cavity of their contents, and had another pull with the same result as before.

Until now the cow had been standing, but now she went down on her side and would not make an effort to get up; and oh, how she would strain! To stop the straining, as I could not do a thing, the fœtus blocking the cavity so that I could not get my hand beyond the rim of the pelvis, I cut a slit in her trachea about two inches long, and presto! no more straining, and the cow got up and stood on her feet all the rest of the time.

After she got up I inserted my hooked knife into the thoracic cavity of the fœtus and got it hooked on to the vertebræ, having a good stout cord attached to the handle, and, keeping a hand on the handle and letting another man do the pulling and I the guiding, I soon had the vertebræ separated; and then, with a hook and cord and the help of the men, I soon had a part of the neck pulled forward from the skin; then with the rope that was around the neck, by pulling tight

on it, I separated the head and neck from the body, and by attaching a rope to the neck and with two hooks through the skin and by three men pulling, we pulled ont the head and neck. Then I got the two hooks into the trunk and pulled the rest of the fœtus out.

I gave the cow three ounces of alcohol and half a pint of water and a pail of warm slops, covered her warmly, and left her with directions for more alcohol about evening.

The cow is doing well, feeds well, and is milking good.

A PECULIAR CASE.

By H. B. Pratt, V.S., St. Louis, Mo.

Monday, Oct. 6th, at 5 P. M. I had a call to go twelve miles to see a sick mare. The owner having come in on the train, he rode back with me. It gave me a good opportunity to get the history of the case, which I had a hard time in doing, and only did so by relating cases that had come under my observation. It had the effect of carrying my employer's thoughts back further than I could have otherwise. He had kindly informed me his mare was paralyzed; that her feed was good corn (eight to twelve ears), hay and when not in use would turn her out on the grass; he drove and rode her a great deal; was known as the best road animal in the neighborhood; had owned her five years and was never sick. On Tuesday, Sept. 30th, came to town; she was fed, as he was informed, a nice bran mash; she had never had a feed of that kind since he owned her. Starting home she showed a looseness of the bowels, and he recollected that she seemed fuller than usual; did not show any pain. Next day, Oct. 1st, did not use her, and he thinks she ate her food; did not see anything unusual. Oct. 2d he rode her; the only thing he could see was that she did not walk as fast as usual. Oct. 3d he did not like the way she acted when urinating; would step around, and, as he said, dance a jig. He led her two miles to the neighborhood horse doctor. He said "Your mare has a slight attack of paralysis, and will be all right in a day or so;" rubbed her back and gave a small quantity of medicine. Oct. 4th would pick

grass, and when walking would give away slightly, recover and walk on, would lie down, seeming to rest, and not very often either; showed no violent symptoms of abdominal pain, would reach around and bite lightly at her sides. Oct. 5th, Sunday, about same symptoms, only that during the night of the 4th she broke her stall. They attributed that to being cast, she at times having trouble getting up, owing to the paralysis. Oct. 6th she showing no change for the better, he concluded to call me; when we arrived the mare had been dead thirty minutes. It was very dark After looking at the body I remarked, "She looks to me as if she had had some abdominal trouble," but never dreaming of such by his description of symptoms, etc., I concluded I would hold post-mortem. After removing abdominal muscles, etc., very carefully I was surprised to see the intestines burst out; the peritoneum had ruptured about eighteen inches in the median line. The abdominal cavity contained a great deal of bloody fluid; all other organs seemed healthy as far as I could see by the poor light (we were in the woods); the injesta of cœcum and colon were dry and hard. The surprise was still to come. On reaching the stomach I found it very large and containing very compact injesta. I took it out, sent for scales, and found it and contents to weigh forty-two pounds. I cut around the greater curvature and removed the stomach; there lay the contents perfectly moulded; had to be pulled apart; found corn, oats, grass, etc. I do not think anything passed from her stomach from Sept. 30th, and that the weight of it ruptured the peritoneum. The mare's weight was not over eight hundred and fifty pounds.

American Veterinary College—Hospital Department.

RECURRENT TUMORS IN A BITCH.

By A. F. Becker, D.V.S., House Surgeon.

This patient was a spaniel bitch, nine years old, brought to the hospital for a large, firm growth about four inches in diameter, adjacent to and behind the posterior mammary gland, close to the inguinal regions. The tumor had been there about three months and was now increasing rapidly.

On the second day of admission she was placed under the influence of ether and the tumor removed in the usual way by an incision made through the skin at the base and enucleation of the growth. This weighed twenty-three and a half ounces. The flaps of the skin were well trimmed, the wound thoroughly washed with bichloride of mercury, 1 to 1,000; the edges of the wound were brought together by interrupted sutures and a dressing of absorbent cotton was applied, with a bandage all round the body. The subsequent treatment consisted in washing and dressing daily with the same solution of bichloride, and at the end of the fourth day the edges of the wound were found firmly adherent; no suppuration had taken place, making a perfect cicatization by first intention. Eight days later the patient was discharged, the wound being entirely healed.

Shortly afterwards a lymphatic gland of the opposite side began to enlarge, and nine days after being discharged she re-entered the hospital with a second tumor, firm and very painful on pressure. Again etherized, the enlarged lymphatic was removed and found to weigh ten and a half ounces. The course of treatment was the same as in the first instance, with the same result, and the patient was discharged five days later.

Three weeks later she was again returned, having this time an enlargement about two and a half inches in diameter at the point where the first operation had been performed. Third etherization and third tumor, four and a quarter ounces in weight, was removed, followed by same treatment and result —complete adhesive union.

Some fifteen days later two other tumors made their appearance, one close to the place where the second had been removed, and the other beneath the vagine and extending backwards to near the vulva. These were removed painlessly with cocoaine and the wounds allowed to heal by granulation.

Again, a week later, another growth appeared; this one on the right flank. Its removal was followed by a rapid healing process.

The dog had by this time been abandoned by the owner, and the treatment was merely kept up to see how far the dis-

eased process might extend. Soon here and there on the flank and on the abdomen other tumors began to appear, growing more rapidly; in general condition the animal began to lose ground, emaciation rapidly progressed, and ultimately the poor dog was, for the last time, chloroformed and destroyed.

At the post-mortem the following conditions were found: the thoracic lymphatics were considerably enlarged; the lungs were filled with numerous nodulated, firm masses; the mediastinum being also extensively covered with growths of the same kind, varying in size; the abdominal organs were found normal. Microscopic examination of these tumors was not made.

LARGE CARCINOMATOUS TUMOR IN A BITCH.

By the Same.

A setter bitch, nine years old, was brought to the hospital with the following history:

About one year previously she had pups, which all died. Shortly after the mammæ of the left side began to enlarge, supposed to be due to mammitis. For the past few months the animal's appetite became poor, and she began to emaciate rapidly.

Upon examination, a large, firm growth was found to extend from left axilla backward to about the third nipple, measuring twenty-nine inches in circumference, twenty-three inches at its point of attachment to peduncle, and superoinferiorly three inches to six laterally. On inferior surface was a large cutaneous ulcer, from which a thin serous fluid was oozing. Brachial lymphatics also considerably enlarged. Operation advised, and on following day hair clipped, and parts thoroughly washed with a solution of bichloride of mercury, 1 to 1000. A ten per cent. solution of cocaine was injected at several points around its base, and at the end of ten minutes a tumor weighing seven pounds was removed, with no evidence of pain whatever. Enlarged lymphatics also removed. Antiseptic dressing applied, and stimulants administered.

Unfortunately, patient never rallied, and died three hours after being operated upon.

PSEUDO-RABIES IN A DOG—POST-MORTEM.

By the Same.

The subject, a large pointer, having died the night previous, after showing suspicious symptoms, was sent to the hospital for post-mortem, with a view of ascertaining, if possible, the cause of death.

The symptoms, as related, were as follows: Excessive thirst; able to swallow very little. Thick, ropy saliva flowing from both corners of the mouth. Dull, depressed look, anxious countenance, and just before death a slight dropping of the lower jaw.

Post-mortem revealed thoracic organs normal; bladder partially filled with urine. Stomach greatly distended with food, as were intestines, until ilium was reached, which showed *intussusception* at *four places*, to the extent of about one inch at each.

The portion of the intestine involved presented all the symptoms of inflammatory action, and formed a complete obstruction to the alimentary canal.

BIBLIOGRAPHY.

MANUAL OF HYPODERMIC MEDICATION. By Drs. Bourneville and Bricon. Revised by G. Archie Stockwell, M.D., F.Z.S., Member New Sydenham Society, London.

Dr. Stockwell is already well known, not only as a writer on subjects relating to human medicine, but also to readers of veterinary literature, by the numerous articles which have from time to time appeared in the pages of the Review. To-day we take pleasure in noticing the publication of a revision made by him of one of the best books on hypodermic medication published in the English language.

This mode of administering medicines is not as yet as frequently employed in our domestic animals as it is in human practice—for no special reasons, perhaps, unless it be the more frequent appearance of complications in animal disorders than is the case in human patients—but it is evidently certain that the old way of balling, drenching and so on is gradually

passing away, to be replaced by more delicate and less *horsy* methods, such as are used in the administration of alkaloids by the dosimetric process, trachial injections and now hypodermic medication. In bringing the subject before the medical profession—human and veterinary—as Dr. Stockwell has done, we feel that he has aided the cause of comparative medicine to a considerable extent, and believe that the volume which he has presented to us will prove to be of much advantage to all veterinarians as well as to physicians. The book is nicely gotten up, forms a volume of little over 100 pages and is published by George S. Davis, of Detroit, Michigan.

THE PRINCIPLES AND PRACTICE OF VETERINARY SURGERY. By Prof. William Williams—Seventh Edition—(Sabiston & Murray, New York).

Yes, the seventh edition. What does a scientific work need by way of recommendation and as evidence of appreciation of its value more than those few words?

It is but a few years—since 1872 being the year of the first edition, if we are not mistaken—when Professor Williams presented to veterinarians his excellent work on veterinary surgery, and at frequent intervals since he has issued editions of his original work, each time enlarging it by the addition of new features of value, and this, the last issue, follows this admirable habit of its predecessors. The book has been for years the best book of all English-reading veterinary schools and has thus found a good market, but medical or veterinary books must keep up with the times if they wish to command and keep the appreciation of scientific men. Professor Williams' works are excellent, their publication has added much, very much to English veterinary literature, but there still remains in the Practice of Surgery room for improvement and even for correction, together with space for the introduction of those new ideas and methods which, in the constant progress of the science, have already met the approval of the profession, and which we hope, for the benefit of veterinary science, we will find in the next issue. The work is gotten up in the same manner as its predecessors, contains two pages more of reading matter and has one more illustration than the sixth edition.

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, on September 24th. The President, Dr. Thomas Blackwood, occupied the chair, and the members present were Drs. Ferguson, Hadcock, Howard, Marshall, Osgood, Peterson, J. S. Saunders, Winchester, and the Secretary; also Dr. Stickney, honorary member; Dr. E. C. Beckett, as guest; and Dr. Emerson, the essayist of the evening.

After the transaction of the routine business, Dr Emerson read a paper on "Punctured Wounds of the Foot, involving the Joint," at the conclusion of which the following discussion took place.

Dr. Ferguson asked the essayist how he accounted for the emaciation being more rapid following wounds of the hind feet than those of the fore feet. The essayist thought that it might be because it is harder for a horse to stand upon two fore feet and a hind foot than it is upon two hind feet and one fore foot.

Dr. Howard thought that next to a case of colic at two o'clock in the morning, he knew of nothing that would make a man more tired than a badly punctured wound of the foot. He said he wanted to see it as soon after it occurred as possible, and to be sure and pare it off enough. He also spoke of a plan of treatment suggested to him by a certain irregular practitioner of Boston, for horses which had lost the use of a foot, which he thought a very brilliant plan. It consisted of a crutch which this man claims to have invented. It can be fastened on the lame leg and the horse turned out to pasture.

Dr. Marshall spoke of the application of Dr. Berns's pads to punctured wounds of the feet, as he had seen them used by the inventor during a recent visit to Brooklyn. The pad is first wet in a solution of fennel, and kept in place by a bandage. The foot can also be soaked in a pail or tub containing a solution of the fennel during the day.

Dr. Peterson liked to cleanse the wound daily with a solution of corrosive sublimate, applied with a syringe.

Dr. Beckett said he used a strong solution of carbolic acid, eighty-five to ninety per cent., made soluble by adding glycerine; it seems to have a powerful effect in stimulating the injured parts to heal, when applied early.

The President also spoke of the use of carbolic acid: in one of the car stables under his charge it is customary to pull the nail out after it is picked up, and then to pour a few drops of carbolic acid into the nail-hole at once, and often with very good results. He did not approve of paring off too much horn at first in these cases, as it was not always necessary.

Dr. Howard said that he had often obtained very good results on many kinds of wounds, on various parts of the animal, by painting the part with an eighty-five or ninety per cent. solution of carbolic acid, applied by a glass rod.

Dr. Howard moved that a vote of thanks be given the essayist for his paper, and that the Secretary cast a ballot for his admission as a member of this Association. Being seconded by Dr. Marshall and carried, the Secretary cast the ballot, and Dr. Emerson was declared elected a member.

Dr. Stickney spoke of a case where a horse picked up a screw-driver without a handle, from which he made a good and speedy recovery.

At the request of the President Dr. Winchester then gave a brief account of his visit to Chicago and of the meeting of the United States Veterinary Medical Association on the 16th and 17th of September.

Dr. Osgood brought up the subject of rabies by reporting a suspicious case of his at Springfield, the dog being in a cell at the police station, under observation. He had bitten two children, but it was still uncertain whether he was really rabid or only vicious. This led to quite a discussion upon rabies, the President, Drs. Winchester, Stickney, Ferguson, Beckett, Peterson and the Secretary taking part.

The conversation turned to the subject of paralysis of the muscles of the lips, face, nostrils and eyelids in horses; the President, Drs. Hadcock, Peterson, Beckett and the Secretary stating cases which had occurred in their practice.

Adjourned.

AUSTIN PETERS, *Secretary.*

IOWA STATE VETERINARY MEDICAL ASSOCIATION.

COUNCIL BLUFF, IOWA, OCTOBER 10, 1890.

The next meeting of the Iowa State Veterinary Medical Association will be held in Des Moines, November 13-14 next. This society seeks to include in its membership all regular graduates of veterinary medicine, in good standing, located in Iowa. A cordial invitation is extended to attend the meeting.

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